wherein the peptide compound brings about a specific T-cell immune response.--

--64. (amended) A pharmaceutical composition comprising a peptide compound according to claim 10 and a pharmaceutically acceptable vehicle.--

Cancel claim 65.

REMARKS

This application has been amended in a manner that is believed to place it in condition for allowance at the time of the next Official Action.

Claims 7, 10, 34-35, and 64 have been amended. Claims 8-9 and 65 have been cancelled. Independent claim 7 has been amended to recite a peptide compound comprising a sequence of at least 8 consecutive amino acids, the peptide is able to induce a specific anti-tumoral T-cell immune response, the amino acid sequence being selected from the group consisting of SLFEGIDIY (SEQ ID No 1) and SLFEGIDIYT (SEQ ID No 2). Support for these claims may eb found in original claim 9.

New Matter

Claims 34-35 have been amended similarly amended.

Withdrawn claims 1-6, 12, 16-18, 22-29, 37-38, and 41-63 have been cancelled without prejudice. These claims were directed to a non-elected invention and may become the subject of a divisional application filed during the pendency of this application.

In the outstanding Official Action, claims 11, and 34-35 were rejected under 35 USC §112, second paragraph. Claims 11, and 34-35 have been amended in a manned to more particularly point out and distinctly claim the present invention.

As to the term "chemical group", applicants submit that chemical groups able to protect peptides against proteases are well known to one of ordinary skill in the art of synthesizing peptide. At the time the present application was filed(April 1998), it was well known that one could design a stable protease-resistant peptide by avoiding proteolytic peptide degradation. Approaches based on modifying the structure of a peptide with chemical groups to inhibit proteolytic degradation exist and have been applied to MHC class I-restricted or class II-restricted antigenic peptides. Indeed, one of ordinary skill in the art could have obtained this information from one of the following publications:

Powell et al., 1993, "Peptide stability in drug development, effect of single amino acid substitution and glycolsylation on peptide reactivity in human serum", Pharm. Res. 10:1268.

Mayer et al., 1995, "Binding properties and protease stability of recomniant human nidogen", Eur. J. Biochem. 227:681

Maillere et al, 1995,"Fine chemical modifications at N- and C- termini enhance peptide presentation to T cells by increasing the lifespan of both free and MHC-complexed peptides", Mol. Immunol. 32:1377.

Thus, it is believed that claims 11, 34, and 35 are definite to one of ordinary skill in the art. Therefore, withdrawal of the rejection is respectfully solicited.

In the outstanding Official Action, claims 7-10, 11, 13-14, 19-21, 30-31 and 64-65 were rejected under 35 USC §112, first paragraph.

The claims have been narrowed to traverse the pending rejection, without prejudice. The broader subject matter may be the subject of a divisional application filed during the pendency of the application. The recitations were previously found in claim 9.

Since the claim 9 recitations were not objected to, it follows that the present amendment overcomes the

first paragraph rejection. Accordingly, withdrawal of this rejection is solicited.

In the outstanding Official Action, claims 7-10, 13, 19, 21, 30, 34 and 35 were rejected under 35 USC §102(b) as allegedly being anticipated by Dragon et al.

Dragon et al. fail to disclose or suggest the claimed invention. Dragon et al. teach the entire wild type sequence of human hsp70. However, the recited peptide of the present invention is directed to a peptide amino acid sequence with a mutation that stands in contrast to the wild type amino acid sequence of hsp70. Accordingly, applicant respectfully disagrees with the Official Action's position that Dragon et al. cites a peptide that is identical to the peptide of the present invention.

Moreover, as Dragon et al fails to provide any suggestion or motivation that an amino acid sequence differing from the wild type hsp70 by only one amino acid could induce an effective T-cell response against tumors, it is believed that Dragon et al fail to render obvious the claimed invention.

In fact, applicant's note that the present invention relates to mutated immunogenic peptides from hsp70 that possess different characteristics from wild type peptides (see example 15 of the present specification).

Thus, it is believed that the different characteristics exhibited by the Dragon et al peptides would lead one skilled in the art away from the claimed invention.

One of ordinary skill in the art would not be able to randomly choose some immunogenic peptidic sequence from a given protein. One of ordinary skill in the art would require some sort of motivation or suggestion to do so. Moreover, it would require some form of experimentation to define which peptides could be immunogenic. As Dragon et al fail to disclose or even suggest modifying their disclosed peptides in such manner, it is believed that the present invention is not anticipated nor render obvious by Dragon et al.

In the outstanding Official Action, claims 7-10, 13, 19-21, 30-31, 34-35, and 64-65 were rejected under 35 USC §103(a) as allegedly being obvious in view of Dragon et al. and further in view of Prakken et al. and Costa et al.

Applicants again respectfully disagree.

As noted, Dragon et al. teaches the entire wild type sequence of human hsp70> However, the claimed invention is directed to a peptide amino acid sequence with a mutation distinct from the wild type amino acid sequence of hsp70. The present inventors have found that peptides containing an

amino acid sequence differing from the wild type hsp70 by only one amino acid can induce an effective T-cell response against tumors in humans.

However, none of the cited publications disclose or even suggest this approach.

Indeed, applicants believe that the obviousness argument fails as one of ordinary skill in the art would still need some suggestion or motivation to combine and modify the teachings of the cited publications in a way to obtain the claimed invention. Moreover, as noted above, one of ordinary skill in the art would then still have to conduct the necessary experimentation.

In fact, in light of the distinct characteristics exhibited by the peptides of the claimed invention relative to those of the cited publications, it is believed there is no motivation for one skilled in the art to even start with wild type peptides. Applicants believe that the inventors have unexpectedly found that peptides containing an amino acid sequence differing from wild type human hsp70 by only one amino acid could induce an effective T-cell response against tumors in humans.

Accordingly, the Prakken et al. and Costa et al. publications fail to remedy the deficiencies of Dragon et

al. As such, applicants respectfully traverse the rejection.

In view of the present amendment and the foregoing remarks, therefore, it is respectfully believed that this application is now in condition for allowance. Allowance and passage to issue on that basis are accordingly respectfully requested.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned **"Version with markings to show changes made."**

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

The claims were amended as follows:

--7. (FOUR TIMES AMENDED) A peptide compound comprising a sequence of at least 8 consecutive amino acids ~~of a natural hsp70 sequence, the sequence having at least one mutation or modification with respect to, and having at least 80% homology with, the amino acids sequence comprised between amino acids 286 and 294 of natural hsp70~~, said peptide being able to induce a specific anti-tumoral T-cell immune response, the amino acid sequence being selected from the group consisting of SLFEGIDIY (SEQ ID No 1) and SLFEGIDIYT (SEQ ID No 2).--

--10. (THREE TIMES AMENDED) The peptide compound as claimed in claim 7 ~~9~~, wherein the amino acid sequence is SEQ ID No. 1.--

--11. (FOUR TIMES AMENDED) The peptide compound as claimed in claim 7, further comprising at least one element selected from the group consisting of:

- a protective chemical group able to protect peptides against proteases and reacting with [the] NH2 or COOH, or with both NH2 and COOH, provided that this

modification does not significantly lower the immunogenicity of the peptide,

- ~~a~~ chemical groups ~~group~~ improving the effectiveness of a vaccine in vivo,

- lipids or fatty acids, covalently linked to the peptide fragments so as to form lipopeptides,

- a carrier protein possessing restriction sites and enabling intact peptide fragments to be conveyed to their sites of action in the body.--

--34. (THREE TIMES AMENDED) A method for ~~immunizing at a distance from~~ systemic immunization of ~~a~~ tumor(s), comprising administering to a patient a medicinal product comprising a peptide compound comprising a sequence of at least 8 consecutive amino acids, the amino acid sequence being selected from the group consisting of SLFEGIDIY (SEQ ID No 1) and SLFEGIDIYT (SEQ ID No 2) ~~of a natural hsp70 sequence the sequence having at least one mutation or modification with respect to the natural hsp70 sequence~~, and wherein the peptide compound brings about a specific T-cell immune response.--

--35. (THREE TIMES AMENDED) A method for immunizing by direct injection in a tumor(s) ~~or at an immediate vicinity near a tumor(s)~~, comprising administering to a patient a medicinal product comprising a sequence of at least 8 consecutive amino acids, the amino acid sequence being selected from the group consisting of SLFEGIDIY (SEQ ID No 1) and SLFEGIDIYT (SEQ ID No 2) ~~of a natural hsp70 sequence the sequence having at least one mutation or modification with respect to the natural hsp70 sequence~~, and wherein the peptide compound brings about a specific T-cell immune response.—

--64. (amended) A pharmaceutical composition comprising a peptide compound according to claim 10 ~~8~~ and a pharmaceutically acceptable vehicle.--